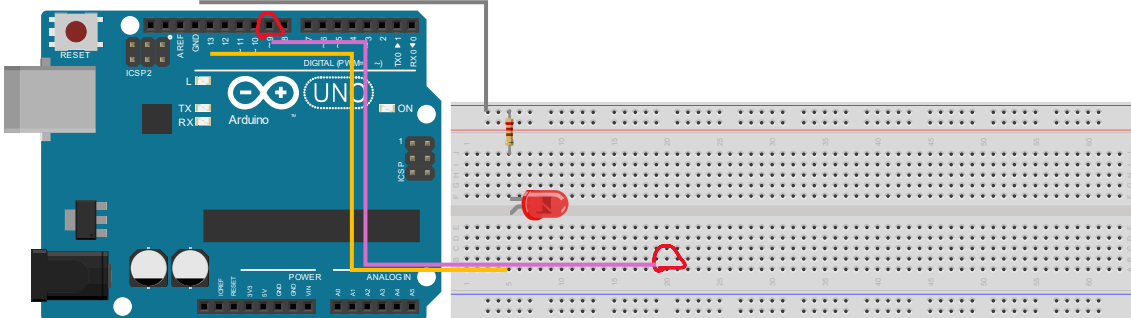# Exercise 3: Button Blink

Purpose: Extend Exercise 2 with an external pushbutton.
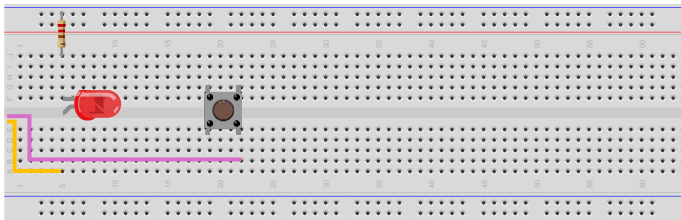
Instructions

1. Unplug your Arduino Uno from the PC.
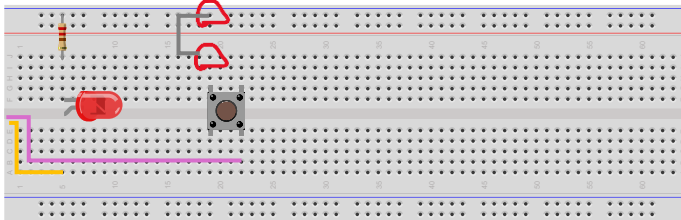2. Locate a pushbutton from your kit.

3. Connect **one** coloured wire to **pin 9** on the Arduino Uno to the breadboard.

4. Connect the pushbutton across the board so the right side connects to the wire.

5. Connect the left side of the pushbutton to ground with a black wire.

6. Plug in your Arduino Uno.
7. Navigate to LEDPushbutton.cpp and copy the contents to the Arduino IDE text area.
   Open the file → Select All (CTRL+A) → Copy (CTRL+C).
   Open Arduino IDE Window → Select Text Area → Paste (CTRL+V).
8. Verify and upload the sketch to the Arduino Uno.
9. Press the pushbutton and confirm LED "L" and the external LED light up.
10. Now use a different program to automate Exercise 1!
11. Navigate to LEDButtonCycle.cpp and copy the contents to the Arduino IDE text area.
    Open the file → Select All (CTRL+A) → Copy (CTRL+C).
    Open Arduino IDE Window → Select Text Area → Paste (CTRL+V).
12. Verify and upload the sketch to the Arduino Uno.

Exercise 3: Button Blink

13. You'll notice the button is *"hard to push"* because the controller is busy doing the blink and can only see the button press when the loop repeats!
    a. Slow blinks will require a longer press.
    b. Faster blinks will require a momentary press.
14. Verify that each button press changes the blink frequency based on the list below.
    a. Initialized: 1Hz.
       (500 ms between on/off)
    b. Button press 1: 2.5Hz
       (200 ms between on/off)
    c. Button press 2: 5Hz
       (100 ms between on/off)
    d. Button press 3: 10Hz
       (50 ms between on/off)
    e. Button press 4: 0.5Hz
       (1000 ms between on/off)
    f. Button press 5: Step a.
       (Loops back around)